IN THE CLAIMS

Please cancel claims 1-55, 98, 99, 109, and 124-132 without prejudice.

Please amendment claims 56, 106, 107, 108, 110, 113, 114, and 117 as follows.

Please add new claims 133-200 as follows.

1 – 55 (cancelled)

56. (currently amended) A method for forming a MEMS device, comprising:

providing a first wafer;

providing a second wafer;

providing a sacrificial layer on or in the first or second wafer;

forming a plurality of MEMS elements on the sacrificial layer;

releasing the plurality of MEMS devices by etching away the sacrificial layer;

mixing one or more spacer elements into an adhesive or providing one or more spacer elements separately from the adhesive for separating the wafers during and after bonding;

applying the adhesive to one or both of the first and second wafers;

bonding the first and second wafers together into a wafer assembly with the spacer elements therebetween so that the first and second wafers are held together in a spaced apart relationship as a wafer assembly; ~~and~~

singulating the wafer assembly into individual dies; and

applying a getter to one or both wafers before bonding the two wafers together into the wafer assembly.

57. (original) The method of claim 56, wherein the releasing comprises providing an etchant selected from an interhalogen, a noble gas fluoride, a vapor phase acid, or a gas solvent.

58. (original) The method of claim 57, wherein the releasing is followed by a stiction treatment.

59. (original) The method of claim 58, wherein the stiction treatment comprises treatment with a silane.

60. (original) The method of claim 58, wherein the stiction treatment is followed by said bonding.

61. (original) The method of claim 60, wherein the time from releasing to bonding is less than 6 hours.

62. (original) The method of claim 56, wherein the first wafer is an optically transmissive wafer or a wafer having one or more layers that when removed result in an optically transmissive substrate.

63. (original) The method of claim 62, wherein the first wafer is glass, borosilicate, tempered glass, quartz or sapphire.

64. (original) The method of claim 56, wherein the second wafer is a dielectric or semiconductor wafer.

65. (original) The method of claim 64, wherein the second wafer comprises GaAs or silicon.

66. (original) The method of claim 56, wherein the first and second wafers are bonded together with an adhesive.

67. (original) The method of claim 66, wherein the adhesive is an epoxy.

68. (original) The method of claim 67, wherein the epoxy comprises balls or rods of predetermined diameter.

69. (original) The method of claim 56, wherein the wafer assembly is separated into individual dies by scribing and breaking.

70. (original) The method of claim 56, wherein the wafer assembly is tested for abnormalities prior to separation into the individual dies.

71. (original) The method of claim 56, further comprising providing a spacing wafer between the first and second wafers.

72. (original) The method of claim 56, further comprising providing microfabricated spacers on one or both of the first and second wafers prior to bonding.

73. (original) The method of claim 66, wherein the adhesive is dispensed by automated controlled liquid dispensing through a syringe.

74. (original) The method of claim 66, wherein the adhesive is dispensed by screen, offset or roller printing.

75. (original) The method of claim 73, wherein the syringe is moved along X-Y coordinates for dispensing.

76. (original) The method of claim 56, wherein the aligning comprises registration of substrate fiducials on opposite wafers.

77. (original) The method of claim 76, wherein the registration is accomplished with a video camera having lens magnification.

78. (original) The method of claim 64, wherein the second wafer is a glass or quartz wafer.

79. (original) The method of claim 56, wherein the bonding of the wafers comprises the dispensing of a UV or thermal cure epoxy.

80. (original) The method of claim 79, wherein the bonding further comprises application of a force of 10 kg force or more.

81. (original)The method of claim 56, wherein the aligning comprises aligning each deflectable element on the first wafer with at least one electrode on the second wafer.

82. (original) The method of claim 56, wherein the separation of the wafer assembly comprises forming scribes on the first and second wafers.

83. (original) The method of claim 25, wherein the scribes are placed in an offset relationship to each other in at least one direction.

84. (original) The method of claim 25, wherein the separation further comprises breaking the wafer assembly along the scribe lines with a guillotine or fulcrum breaking machine.

85. (original) The method of claim 56, wherein the separation of the wafer assembly comprises sawing partially through each wafer followed by breaking along the sawed lines.

86. (original) The method of claim 56, wherein the sawing is done in the presence of a high-pressure jet of water.

87. (original) The method of claim 56, wherein the bonding comprises applying a sealant near the perimeter of each array on the wafer.

88. (original) The method of claim 87, further comprising applying a sealant around the perimeter of at least one of the wafers.

89. (original) The method of claim 56, wherein the bonding comprises applying an adhesive and spacers, the spacers having a size of from 1 to 100 microns.

90. (original) The method of claim 89, wherein the spacers have a size of from 1 to 20 microns.

91. (original) The method of claim 56, wherein the plurality of deflectable elements are reflective mirror elements and are formed on the second wafer which is a light transmissive wafer, at least with any surface coating removed therefrom.

92. (previously presented) The method of claim 56, wherein the microfabricated spacers comprise an organic material.

93. (original) The method of claim 89, wherein the spacers are glass or plastic spacers.

94. (original) The method of claim 56, wherein the plurality of MEMS devices are optical or radio frequency switches, or are pressure or acceleration sensors.

95. (original) The method of claim 56, further comprising packaging the wafer assembly dies.

96. (original) The method of claim 56, wherein the MEMS devices are an array of micromirrors.

97. (original) The method of claim 56, further comprising: applying a stiction reducing agent to one or both wafers before or after bonding the two wafers together, but before singulating the wafer assembly into dies.

98. (cancelled)

99. (currently amended) The method of claim 56 ~~98~~, wherein the getter is a molecular, hydrogen and/or particle getter.

100. (original) The method of claim 99, wherein the getter is a particulate and moisture getter.

101. (original) The method of claim 99, wherein the getter is capable of absorbing moisture.

102. (original) The method of claim 97, wherein the stiction reducing agent is a silane applied to the deflectable elements.

103. (original) The method of claim 97, wherein the stiction reducing agent is a chlorosilane.

104. (original) The method of claim 96, wherein a plurality of light blocking masks are formed on the second wafer.

105. (original) The method of claim 104, wherein when the wafer assembly is singulated into wafer assembly dies, a light blocking mask is disposed on a second wafer portion within each wafer assembly die.

106. (currently amended) A method for making a MEMS device, comprising:

providing a first wafer;

providing a second wafer;

forming circuitry and a plurality of electrodes on or in the first wafer;

forming a plurality of deflectable elements on or in either the first or second wafer;

applying an adhesion reducing agent and/or a getter to one or both of the wafers;

aligning the first and second wafers;

bonding the first and second wafers together to form a wafer assembly; and

separating the wafer assembly into individual wafer assembly dies;

<u>wherein a getter is applied to one or both wafers before bonding the two wafers together</u>.

107. (currently amended) The method of claim 106,wherein the ~~a stiction~~ adhesion reducing agent is applied ~~to one or both wafers~~ before or after bonding the two wafers together, but before singulating the wafer assembly into dies.

108. (currently amended) The method of claim 107, wherein the ~~stiction~~ adhesion reducing agent is applied to at least one of the wafers prior to wafer bonding.

109. (cancelled).

110. (currently amended) The method of claim 106 ~~109~~, wherein the getter is a molecular, hydrogen and/or particle getter.

111. (original) The method of claim 110, wherein the getter is a particulate and moisture getter.

112. (original) The method of claim 110, wherein the getter is capable of absorbing moisture.

113. (currently amended ) The method of claim 107, wherein the ~~stiction~~ adhesion reducing agent is a silane applied in a vapor phase to the deflectable elements.

114. (currently amended) The method of claim 113, wherein the ~~stiction~~ adhesion reducing agent is a chlorosilane.

115. (original) The method of claim 114, wherein the chlorosilane is a partially or fully fluorinated chlorosilane.

116. (original) The method of claim 115, wherein the chlorosilane has an alkyl chain of at least 8 carbons or a ring structure.

117. (currently amended) The method of claim 116, wherein the chlorosilane ~~chlorosialne~~ is a trichlorosilane having an alkyl chain of at least 8 carbon atoms.

118. (original) The method of claim 116, wherein the chlorosilane is a trichlorosilane having a single or multi ring organic substituent.

119. (original) The method of claim 106, wherein one of the wafers is a glass or quartz wafer having one or more rectangular masks thereon.

120. (original) The method of claim 119, wherein one of the wafers comprises an array of micromirrors and the other of the wafers is transmissive to visible light.

121. (original) The method of claim 120, wherein the wafer transmissive to visible light comprises one or more visible light blocking areas.

122. (original) The method of claim 121, wherein the visible light blocking areas are substantially rectangular.

123. (original) The method of claim 106, wherein when the wafer assembly is singulated into wafer assembly dies, a light blocking mask is disposed on a second wafer portion within each wafer assembly die.

124—132 (cancelled)

133. (new) A method for forming a MEMS device, comprising:

providing a first wafer;

providing a second wafer;

providing a sacrificial layer on or in the first or second wafer;

forming a plurality of MEMS elements on the sacrificial layer;

releasing the plurality of MEMS devices by etching away the sacrificial layer;

mixing one or more spacer elements into an adhesive or providing one or more spacer elements separately from the adhesive for separating the wafers during and after bonding;

applying the adhesive to one or both of the first and second wafers;

bonding the first and second wafers together with the spacer elements therebetween so that the first and second wafers are held together in a spaced apart relationship as a wafer assembly;

singulating the wafer assembly into individual dies; and

applying an adhesion reducing agent to one or both wafers before or after bonding the two wafers together, but before singulating the wafer assembly into dies.

134. (new) The method of claim 133, wherein the releasing comprises providing an etchant selected from an interhalogen, a noble gas fluoride, a vapor phase acid, or a gas solvent.

135. (new) The method of claim 134, wherein the releasing is followed by an adhesion reducing treatment.

136. (new) The method of claim 135, wherein the adhesion reducing treatment comprises treatment with a silane.

137. (new) The method of claim 135, wherein the adhesion reducing treatment is followed by said bonding.

138. (new) The method of claim 137, wherein the time from releasing to bonding is less than 6 hours.

139. (new) The method of claim 133, wherein the first wafer is an optically transmissive wafer or a wafer having one or more layers that when removed result in an optically transmissive substrate.

140. (new) The method of claim 139, wherein the first wafer is glass, borosilicate, tempered glass, quartz or sapphire.

141. (new) The method of claim 133, wherein the second wafer is a dielectric or semiconductor wafer.

142. (new) The method of claim 141, wherein the second wafer comprises GaAs or silicon.

143. (new) The method of claim 133, wherein the first and second wafers are bonded together with an adhesive.

144. (new) The method of claim 143, wherein the adhesive is an epoxy.

145. (new) The method of claim 144, wherein the epoxy comprises balls or rods of predetermined diameter.

146. (new) The method of claim 133, wherein the wafer assembly is separated into individual dies by scribing and breaking.

147. (new) The method of claim 133, wherein the wafer assembly is tested for abnormalities prior to separation into the individual dies.

148. (new) The method of claim 133, further comprising providing a spacing wafer between the first and second wafers.

149. (new) The method of claim 133, further comprising providing microfabricated spacers on one or both of the first and second wafers prior to bonding.

150. (new) The method of claim 133, wherein the adhesive is dispensed by automated controlled liquid dispensing through a syringe.

151. (new) The method of claim 133, wherein the adhesive is dispensed by screen, offset or roller printing.

152. (new) The method of claim 150, wherein the syringe is moved along X-Y coordinates for dispensing.

153. (new) The method of claim 133, wherein the aligning comprises registration of substrate fiducials on opposite wafers.

154. (new) The method of claim 153, wherein the registration is accomplished with a video camera having lens magnification.

155. (new) The method of claim 151, wherein the second wafer is a glass or quartz wafer.

156. (new) The method of claim 133, wherein the bonding of the wafers comprises the dispensing of a UV or thermal cure epoxy.

157. (new) The method of claim 156, wherein the bonding further comprises application of a force of 10 kg force or more.

158. (new)The method of claim 133, wherein the aligning comprises aligning each deflectable element on the first wafer with at least one electrode on the second wafer.

159. (new) The method of claim 133, wherein the separation of the wafer assembly comprises forming scribes on the first and second wafers.

160. (new) The method of claim 102, wherein the scribes are placed in an offset relationship to each other in at least one direction.

161. (new) The method of claim 102, wherein the separation further comprises breaking the wafer assembly along the scribe lines with a guillotine or fulcrum breaking machine.

162. (new) The method of claim 133, wherein the separation of the wafer assembly comprises sawing partially through each wafer followed by breaking along the sawed lines.

163. (new) The method of claim 133, wherein the sawing is done in the presence of a high-pressure jet of water.

164. (new) The method of claim 133, wherein the bonding comprises applying a sealant near the perimeter of each array on the wafer.

165. (new) The method of claim 164, further comprising applying a sealant around the perimeter of at least one of the wafers.

166. (new) The method of claim 133, wherein the bonding comprises applying an adhesive and spacers, the spacers having a size of from 1 to 100 microns.

167. (new) The method of claim 166, wherein the spacers have a size of from 1 to 20 microns.

168. (new) The method of claim 133, wherein the plurality of deflectable elements are reflective mirror elements and are formed on the second wafer which is a light transmissive wafer, at least with any surface coating removed therefrom.

169. (new) The method of claim 133, wherein the microfabricated spacers comprise an organic material.

170. (new) The method of claim 156, wherein the spacers are glass or plastic spacers.

171. (new) The method of claim 133, wherein the plurality of MEMS devices are optical or radio frequency switches, or are pressure or acceleration sensors.

172. (new) The method of claim 133, further comprising packaging the wafer assembly dies.

173. (new) The method of claim 133, wherein the MEMS devices are an array of micromirrors.

174. (new) The method of claim 133, further comprising: applying a getter to one or both wafers before bonding the two wafers together into a wafer assembly.

175. (new) The method of claim 133, wherein the getter is a molecular, hydrogen and/or particle getter.

176. (new) The method of claim 133, wherein the getter is a particulate and moisture getter.

177. (new) The method of claim 176, wherein the getter is capable of absorbing moisture.

178. (new) The method of claim 133, wherein the adhesion reducing agent is a silane applied to the deflectable elements.

179. (new) The method of claim 178, wherein the adhesion reducing agent is a chlorosilane.

180. (new) The method of claim 172, wherein a plurality of light blocking masks are formed on the second wafer.

181. (new) The method of claim 180, wherein when the wafer assembly is singulated into wafer assembly dies, a light blocking mask is disposed on a second wafer portion within each wafer assembly die.

182. (new) A method for forming a MEMS device, comprising:

providing a first wafer;

providing a second wafer;

providing a sacrificial layer on or in the first or second wafer;

forming a plurality of MEMS elements on the sacrificial layer;

releasing the plurality of MEMS devices by etching away the sacrificial layer;

mixing one or more spacer elements into an adhesive or providing one or more spacer elements separately from the adhesive for separating the wafers during and after bonding;

applying the adhesive to one or both of the first and second wafers;

bonding the first and second wafers together with the spacer elements therebetween so that the first and second wafers are held together in a spaced apart relationship as a wafer assembly;

singulating the wafer assembly into individual dies; and

forming a plurality of light blocking masks on the second wafer.

183. (new) A method of making a MEMS device, comprising:

providing a first wafer;

providing a second wafer;

forming circuitry and a plurality of electrodes on or in the first wafer;

forming a plurality of deflectable elements on or in either the first or second wafer;

applying an adhesion reducing agent and/or a getter to one or both of the wafers;

aligning the first and second wafers;

bonding the first and second wafers together to form an assembly;

separating the wafer assembly into individual assembly dies; and

applying an adhesion reducing agent to one or both wafers before or after bonding the two wafers together, but before singulating the wafer assembly into dies; wherein the adhesion reducing agent is a silane applied in a vapor phase to the deflectable elements.

184. (new) A method for making a MEMS device, comprising:

providing a first wafer;

providing a second wafer;

forming circuitry and a plurality of electrodes on or in the first wafer;

forming a plurality of deflectable elements on or in either the first or second wafer;

applying an adhesion reducing agent and/or a getter to one or both of the wafers;

aligning the first and second wafers;

bonding the first and second wafers together to form a wafer assembly; and

separating the wafer assembly into individual wafer assembly dies;

wherein one of the wafers is a glass or quartz wafer having one or more rectangular masks thereon.

185. (new) The method of claim 184,wherein the adhesion reducing agent is applied to one or both wafers before or after bonding the two wafers together, but before singulating the wafer assembly into dies.

186. (new) The method of claim 185, wherein the adhesion reducing agent is applied to at least one of the wafers prior to wafer bonding.

187. (new) The method of claim 186, wherein the getter is a molecular, hydrogen and/or particle getter.

188. (new) The method of claim 187, wherein the getter is a particulate and moisture getter.

189. (new) The method of claim 187, wherein the getter is capable of absorbing moisture.

190. (new) The method of claim 184, wherein the adhesion reducing agent is a silane applied in a vapor phase to the deflectable elements.

191. (new) The method of claim 190, wherein the adhesion reducing agent is a chlorosilane.

192. (new) The method of claim 191, wherein the chlorosilane is a partially or fully fluorinated chlorosilane.

193. (new) The method of claim 191, wherein the chlorosilane has an alkyl chain of at least 8 carbons or a ring structure.

194. (new) The method of claim 191, wherein the chlorosilane is a trichlorosilane having an alkyl chain of at least 8 carbon atoms.

195. (new) The method of claim 191, wherein the chlorosilane is a trichlorosilane having a single or multi ring organic substituent.

196. (new) The method of claim 184, wherein one of the wafers is a glass or quartz wafer having one or more rectangular masks thereon.

197. (new) The method of claim 196, wherein one of the wafers comprises an array of micromirrors and the other of the wafers is transmissive to visible light.

198. (new) The method of claim 197, wherein the wafer transmissive to visible light comprises one or more visible light blocking areas.

199. (new) The method of claim 198, wherein the visible light blocking areas are substantially rectangular.

200. (new) The method of claim 184, wherein when the wafer assembly is singulated into wafer assembly dies, a light blocking mask is disposed on a second wafer portion within each wafer assembly die.